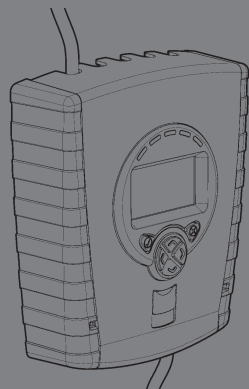
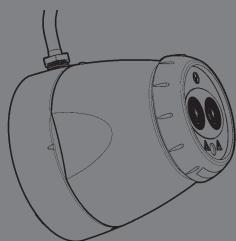
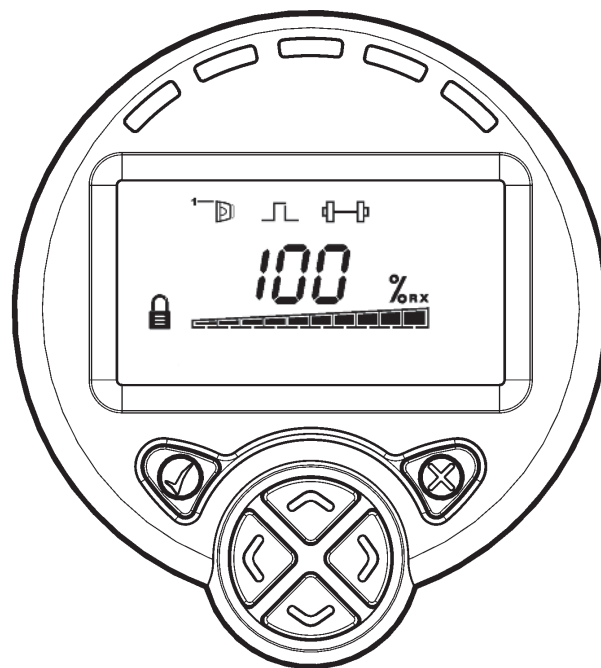


USER GUIDE

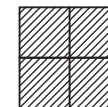
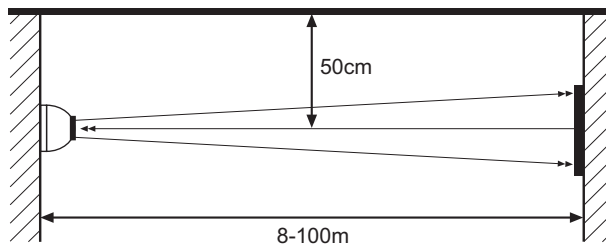
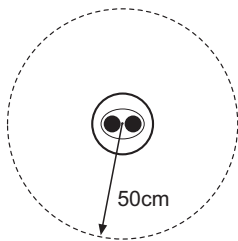


IMPORTANT

PLEASE NOTE: The infrared beam path MUST be kept clear of obstructions at all times!

Failure to comply may result in the Detector initiating a Fire or Fault signal.

	Installation
4	General Information
5	Fitting the Product
6	Wiring Diagrams
	Commissioning
7	Apply Power and Enter Pass Code
8	Select Power Mode and Distance
9	LASER Targeting
10	'Auto' Alignment and 'Set' 0/100 (Calibrate)
	In Use
11	Settings and Final Tests
12	Cleaning, Manual Fire and Fault Tests
	Troubleshooting
13	Error Codes
14	LASER Not Visible
15	Home Position
	System Information
16	LCD Icon Layout
17	Status Indicators
18	User Menu Layout
20	Engineering Menu Layout
21	Detector Settings Menu Layout
22	System Controller Settings Menu Layout
23	Operating Parameters and Dimensions
24	Approvals and Territory Specific Information



50—100m = x4



18—50m = x1



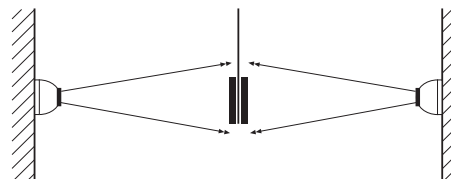
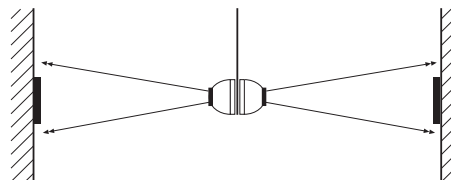
8—18m = x1

Use Short Range Mask

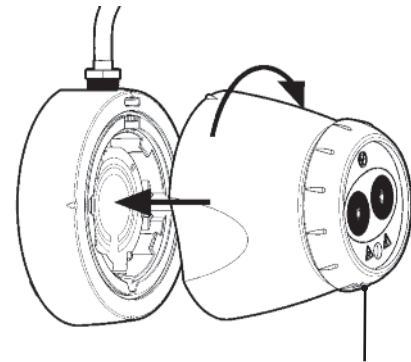
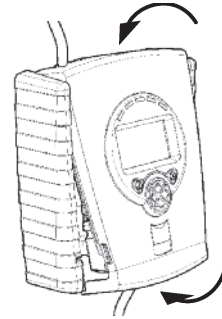
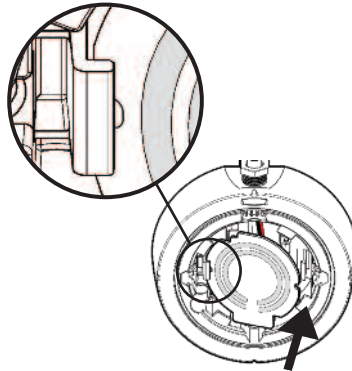
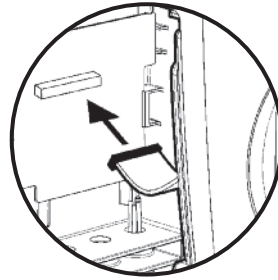
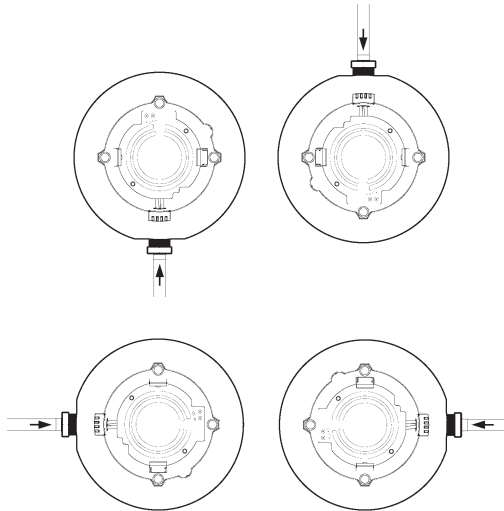
Ensure clear line of sight from Detector to Reflector

Mount on solid surfaces (structural wall or girder)

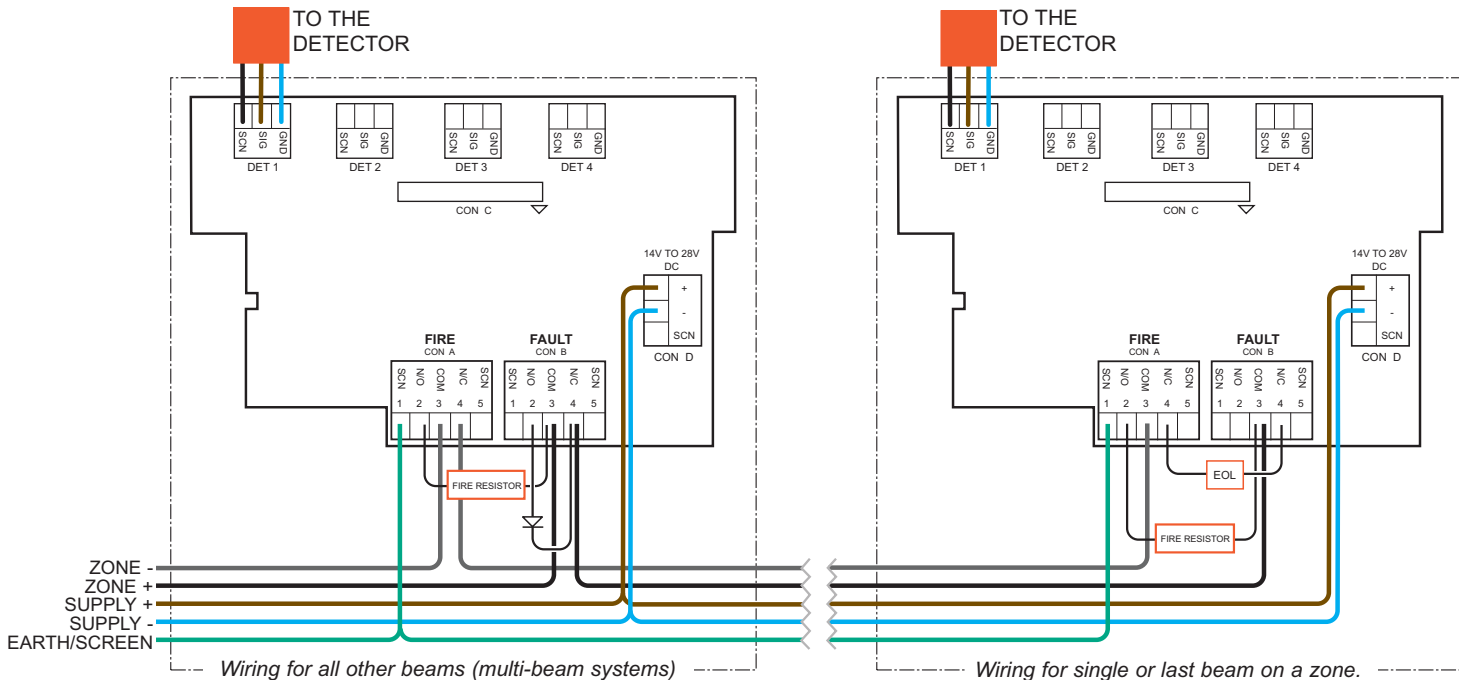
- Check the beam spacing against local regulations
- Position beam as high as possible, but with a minimum distance of 0.5m from detector to ceiling
- Mount Detector and Reflector directly opposite each other
- Do NOT position detector where personnel or objects can enter the beam path



Options for Detector wiring orientation



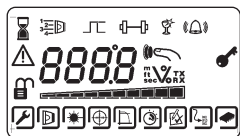
LED indicator must face downward



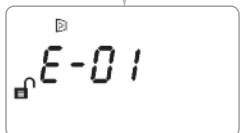
- **Fire Resistor** - Contact Fire Control Panel manufacturer for values of Fire Resistor. Some Zone and Switch Interface Modules do not need a Fire Resistor - replace Resistor with a short circuit. Refer to supplied CD for further information.
- Check operation of Fire and Fault connection on Fire Panel

- ALWAYS use a separate screened 2-core cable for each detector head
- End Of Line ('EOL') component is supplied by Fire Control Panel manufacturer
- CAUTION: For system monitoring – Do not use looped wire under any terminals. Break wire run to provide monitoring of connections.

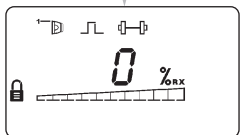
1. Apply power



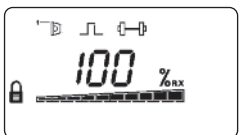
2 seconds



40 seconds

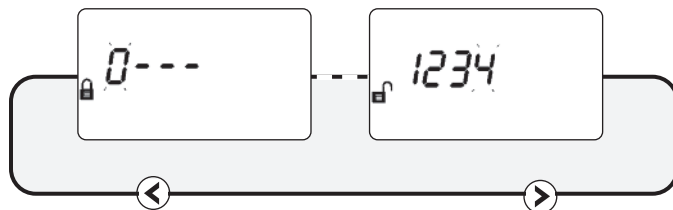


Note - a commissioned system will display:



2. Enter Pass Code to Access Engineering Menu

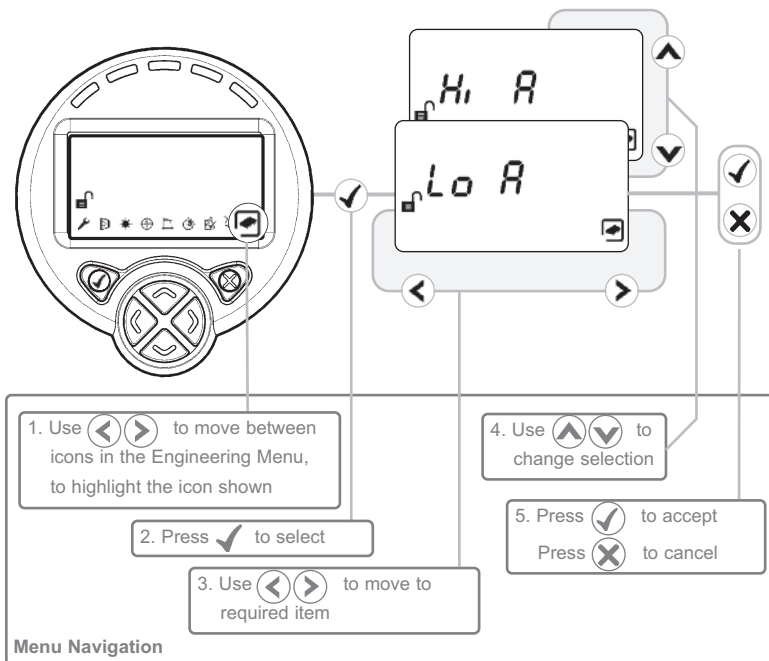
Press ✓ for Pass Code screen:



- Default Pass Code: 1 2 3 4
- ▲ ▼ Change digit
- ◀ ▶ Move between digits
- ✓ Accept
- An incorrect Pass Code will return the display to the Pass Code entry screen
- Three incorrect attempts will lock access for three minutes

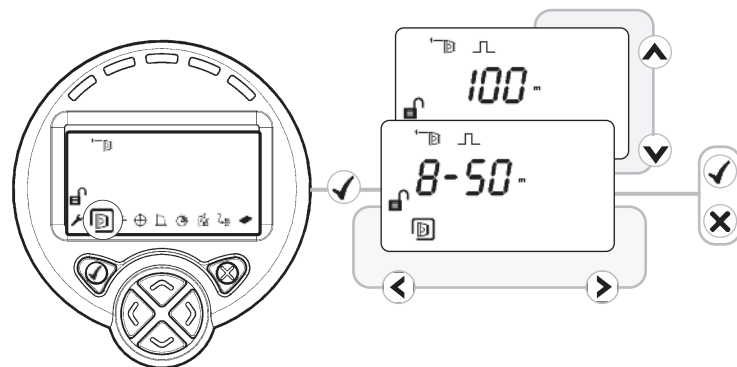
3. Select Power Mode

- All functions can be performed in 'Lo A' (10mA) mode (default)
- Select 'Hi A' (50mA) to enable faster beam movement during Auto-Align and Laser Targeting
- After installation, set the system back to 'Lo A'

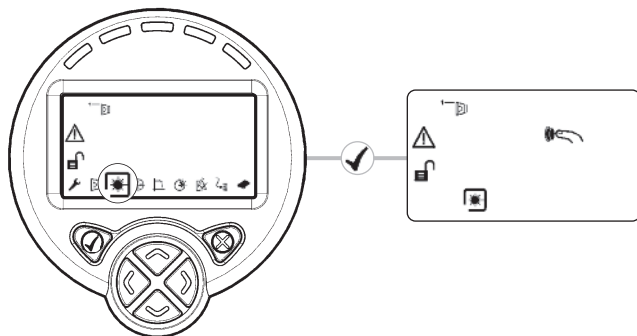


4. Select Distance between Detector and Reflector

- Select 8-50m (default) or 100m



5. LASER Targeting



LASER RADIATION - AVOID
DIRECT EYE EXPOSURE

POWER OUTPUT < 5mW

CLASS IIIa LASER

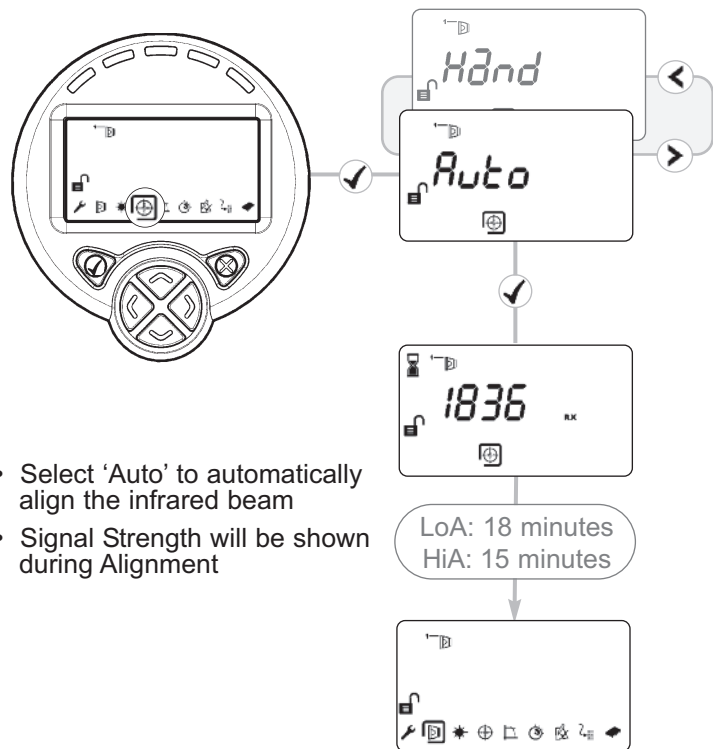
Wavelength 630 - 680 nm

The system will signal Fault while in this mode

The LASER is used to align the Detector with the Reflector. It is an approximate alignment tool only. After Auto-Align the LASER may not be aimed directly at the Reflector.

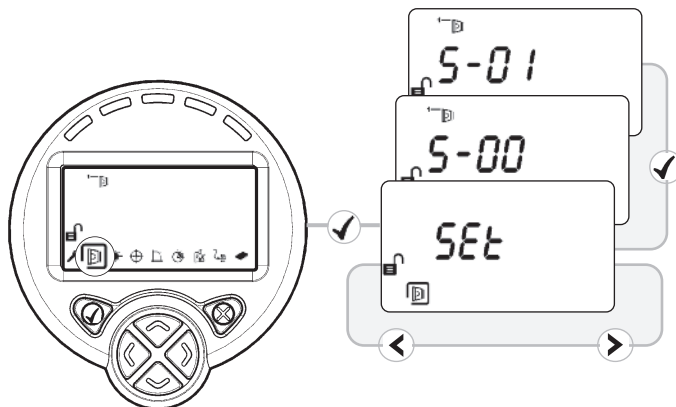
- Use to move the LASER as close to the Reflector as possible
- One press of an arrow key results in one movement of the Detector head
- Press or to turn off the LASER and return to the Settings menu
- Refer to User Guide page 14 for troubleshooting if LASER is not visible

6. 'Auto' Alignment



- Select 'Auto' to automatically align the infrared beam
- Signal Strength will be shown during Alignment

7. 'Set' 0/100 (Calibrate)



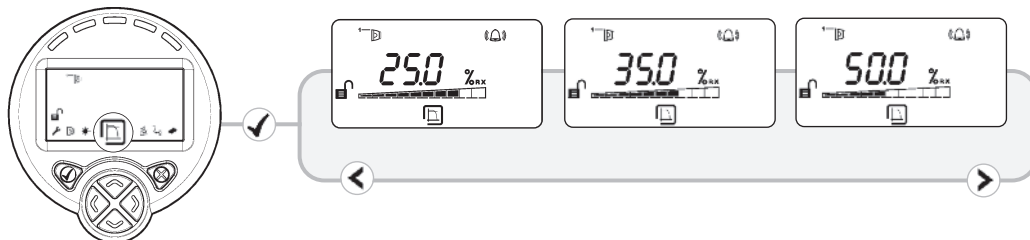
- When 'Set' is displayed press ✓
- When 'S-00' is displayed, cover the Reflector with a non-reflective material and leave covered, then press ✓
- When 'S-01' is displayed, uncover the Reflector and leave uncovered, then press ✓

8. System is Aligned

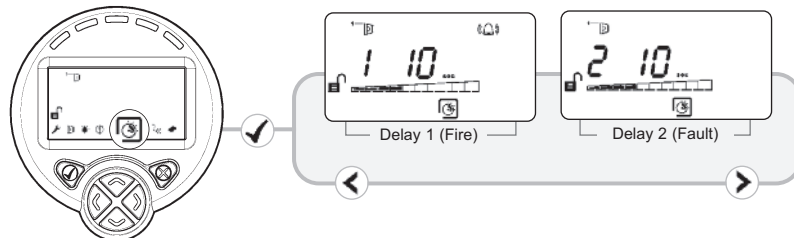
- It is recommended to set the system back to 'Lo A' mode
- Green LED on Detector will flash every 10 seconds, and Signal Strength should be between 99% and 101%
- Default values: 35% Fire Threshold, 10 second delay to Fire and Fault, Non-Latching mode
- Refer to User Guide page 11—12 to change settings and for Fire and Fault Test

Fire Threshold

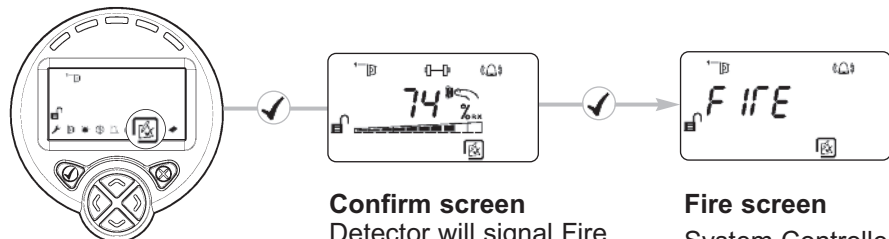
How to change the threshold at which the Detector will detect a Fire

**Fire / Fault Delay**

How to change the delay the System Controller uses before signalling a Fire or Fault to the Fire Control Panel

**Fire Test**

How to perform a Fire Test from the System Controller, to test the wiring to the Fire Control Panel

**Confirm screen**

Detector will signal Fire, System Controller will stay Normal.

Press **✗** to exit without performing the test

Fire screen

System Controller signals 'Fire' to Fire Control Panel

Press **✓** or **✗** to exit

Cleaning the System

The system will automatically compensate for dust build-up by changing the Compensation Level.

However, it is recommended that the Detector lenses and the Reflector are cleaned periodically with a soft lint-free cloth.

If the Compensation Level remains above 130 for several days, this indicates that cleaning should take place.

The system should be isolated from the Fire Control Panel before cleaning takes place.

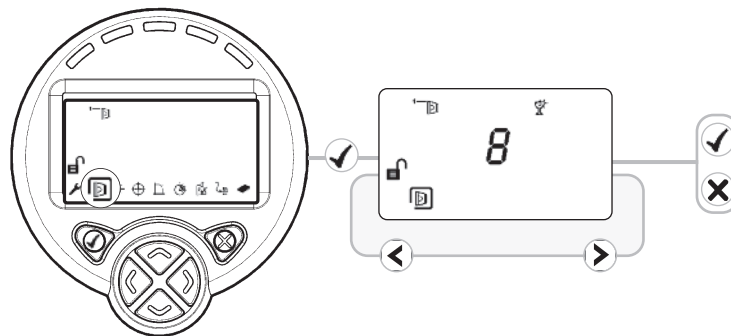
After cleaning, verify that the system is operating normally:

If the Signal Strength is between 90% and 110%
- leave the system to compensate back to 100%
(this should take no more than 12 hours)

If the Signal Strength is above 110%
- reduce Compensation Level until Signal Strength is 90—110%, and wait for system to compensate back to 100%

If the Signal Strength is below 90%
- perform LASER Targeting, Auto-Align, and Set.

How to change Compensation Level:

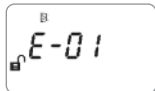


Manual Fire and Fault Tests

After installation or cleaning, it is recommended that a manual Fire and Fault test is performed:

Fire Test: Cover the Reflector slowly so that it takes longer than 2 seconds to cover. The System Controller will signal Fire to the Fire Control Panel.

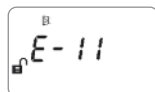
Fault Test: Cover the reflector completely within 2 seconds. The System Controller will signal Fault back to the Fire Control Panel.



Detector Not Found

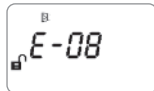
System Controller could not find Detector. Also displayed during power up.

- Wait 45 seconds for system to power up
- Check wiring between System Controller and Detector (Voltage to Detector should be 11—13V)



Auto-Align Failed

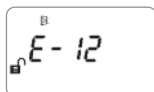
- Ensure correct distance between Reflector and roof structures
- Ensure clear line of sight to Reflector
- Re-align Detector using Auto-Align



Compensation Level Not Zero

Compensation must equal zero when 'Set' is selected.

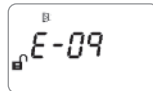
- Re-align beam using Auto-Align



Cannot Zero During 'S-00' in 'Set'

The Reflector was not covered or the Detector was not aligned onto the Reflector.

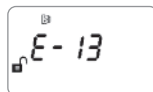
- Ensure Reflector was completely covered with a non-reflective material
- Re-align Detector using Auto-Align



Signal Strength Out of Range.

Signal Strength is too low or too high after Auto-Align.

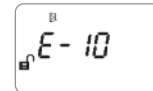
- Ensure correct distance has been set
- Ensure correct Reflector type has been used
- Ensure clear line of sight to Reflector
- Re-align beam using LASER and Auto-Align



No Signal During 'S-01' in 'Set'

The Reflector was not uncovered during 'S-01'.

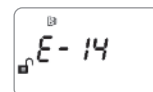
- Ensure Reflector was uncovered when 'S-01' was selected



Reflector Not Found.

Detector could not align with Reflector

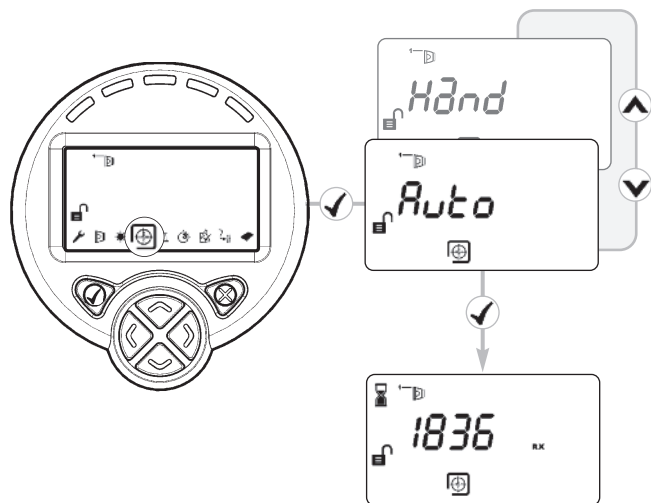
- Ensure correct distance has been set
- Ensure correct Reflector type has been used
- Ensure clear line of sight to Reflector
- Re-align beam using LASER and Auto-Align



'Centre' Stage of Alignment Failed

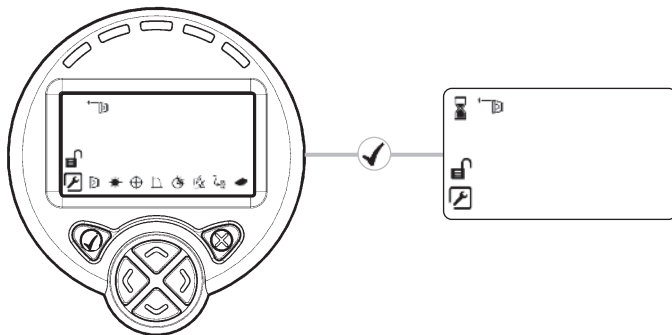
Detector is too far from the centre of the Reflector

- Ensure clear line of sight to Reflector
- Ensure correct distance between beam path and roof structures



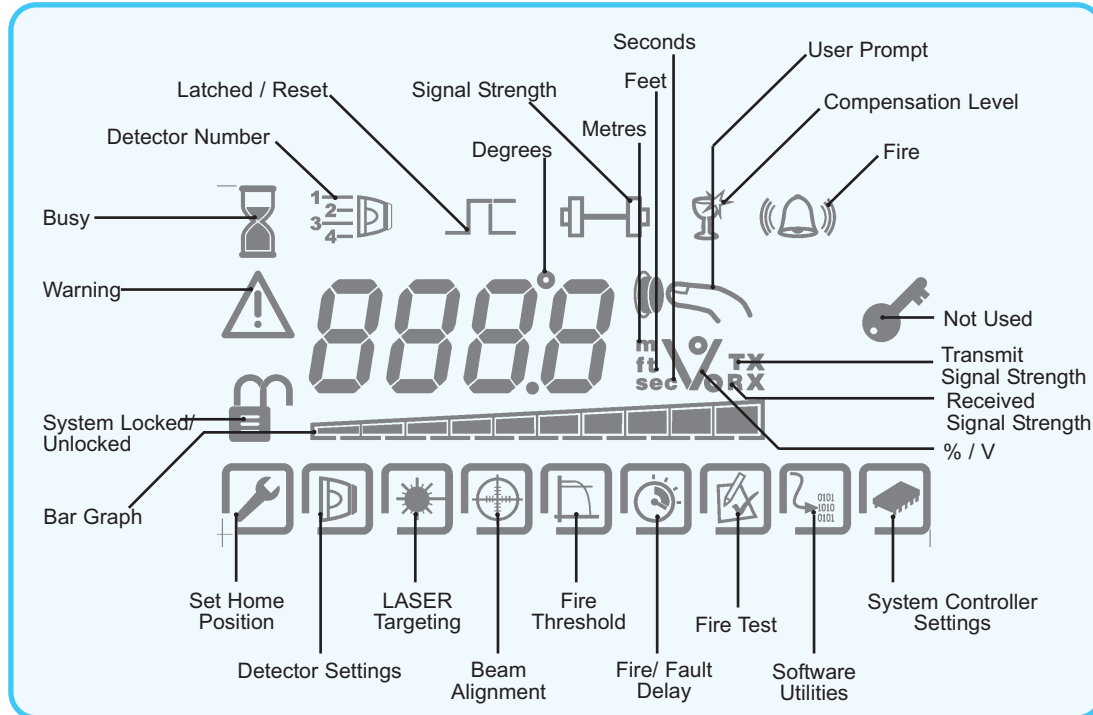
If it is not possible to see the LASER because of the installation environment (for example, if you cannot see the Reflector from the System Controller or there is high ambient light) then use 'Hand' Alignment. This option displays the signal strength value returned by the Detector, and allows the user to move the beam

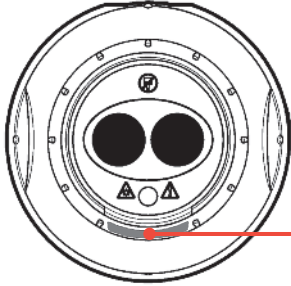
1. Start 'Auto' Alignment and press **X** after two seconds to exit. (this will maximise infrared power)
2. Select 'Hand' alignment
3. Use **◀ ▶ ▲ ▼** to steer the beam until the signal strength is above 800. There is no auto-repeat function on any key. To move the motor in any given direction more than once, press the key multiple times
4. Cover the Reflector. If the Signal Strength does not drop by more than half, the beam is not aligned to the Reflector, so repeat Step 3
5. Perform 'Auto' alignment, followed by 'Set'



If it is not known where the beam is pointing, use Home Position to automatically steer the infrared beam to approximately the centre of its range of movement.

- Press **✓** or **✗** to exit this function
- This will take up to 15 minutes to complete
- When complete the display will return to the Engineering Menu

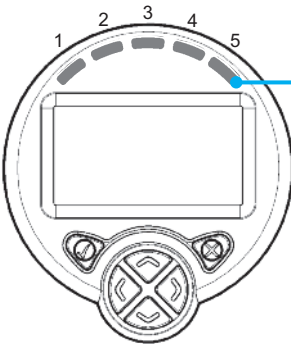




Detector

Indicator flashes every 10 seconds.

NORMAL:	GREEN
FAULT:	YELLOW
FIRE:	RED



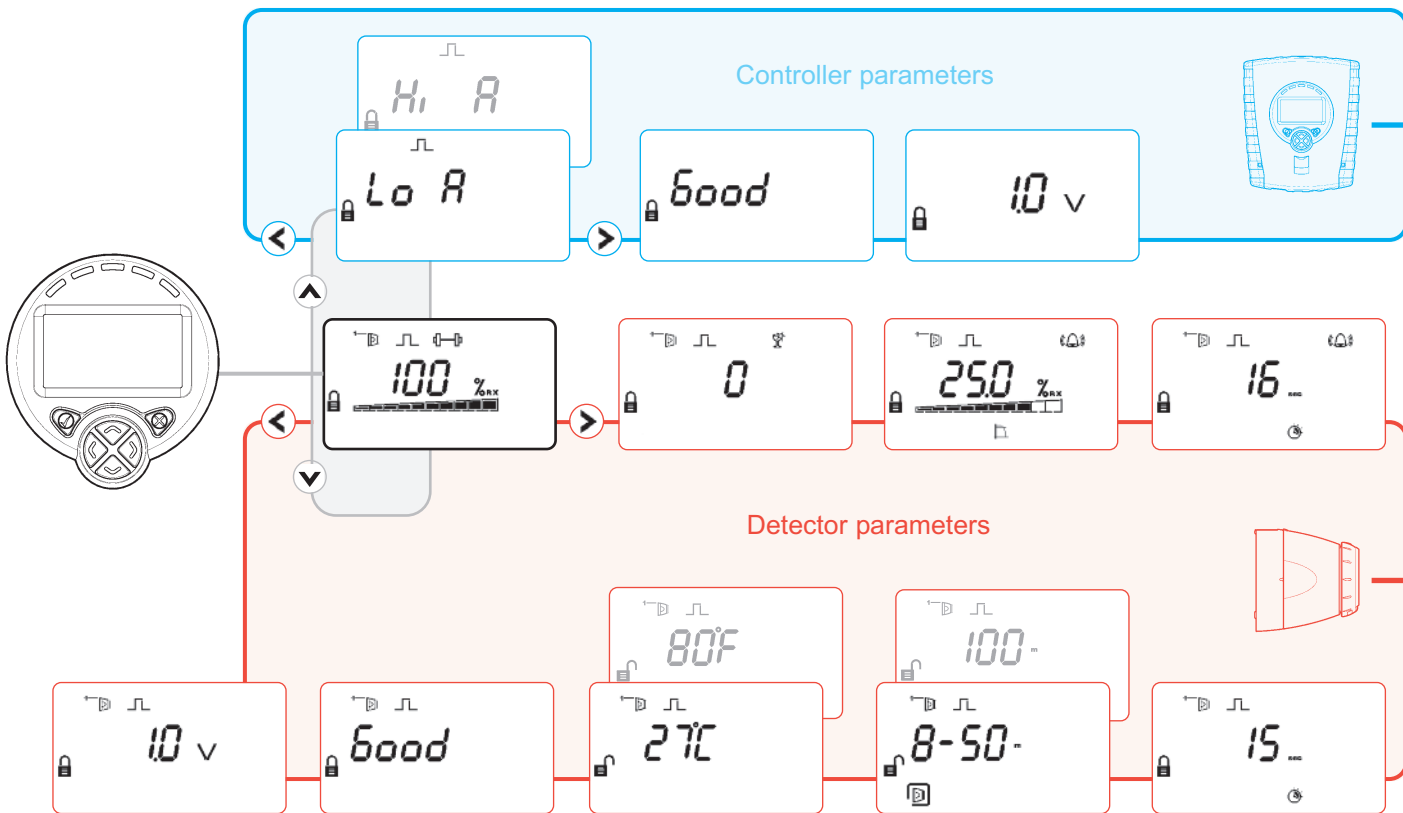
System Controller



Indicators 1 to 4 show status for Detectors 1 to 4*:

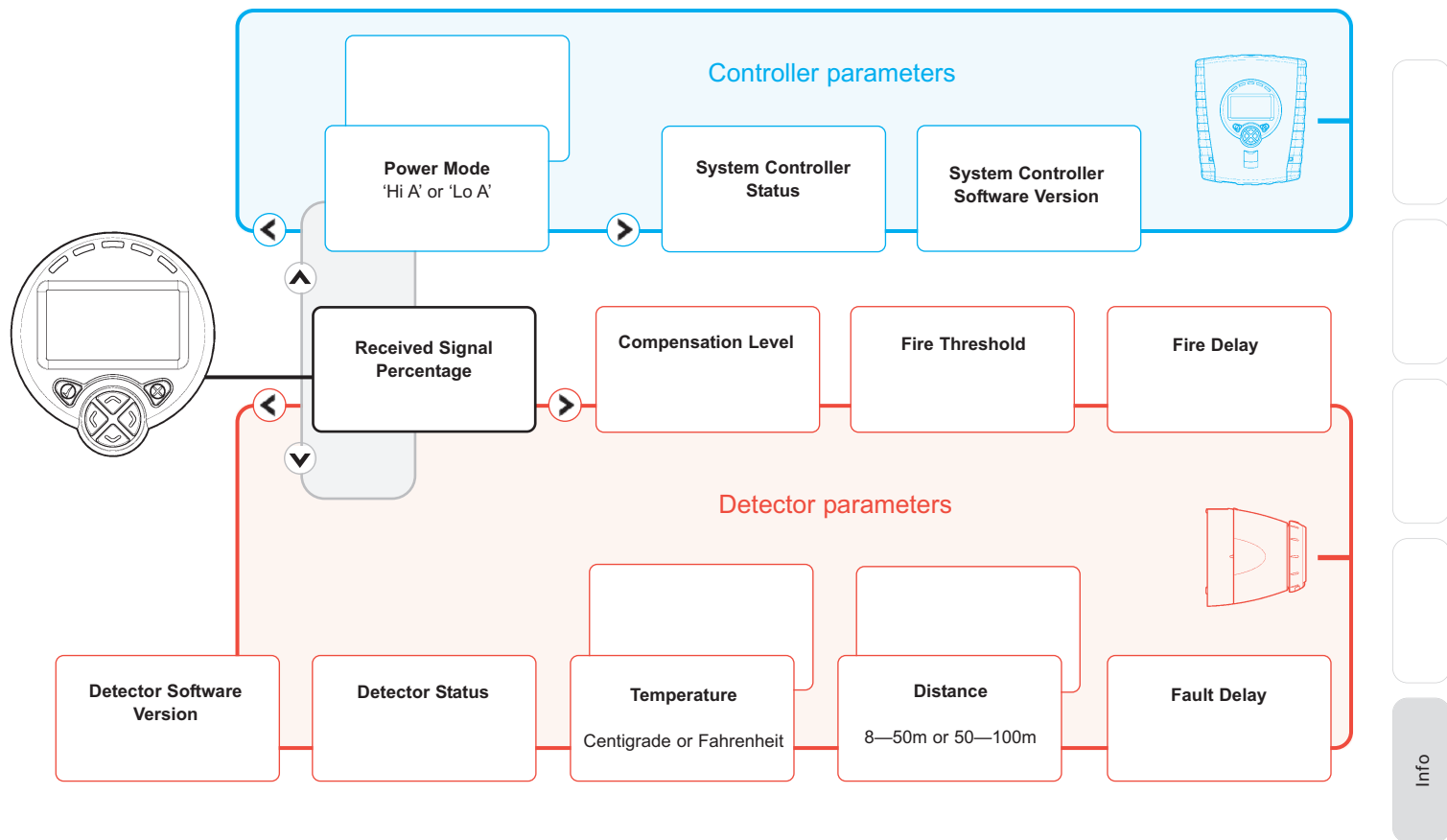
NORMAL:	No flash
FAULT:	YELLOW
FIRE:	RED

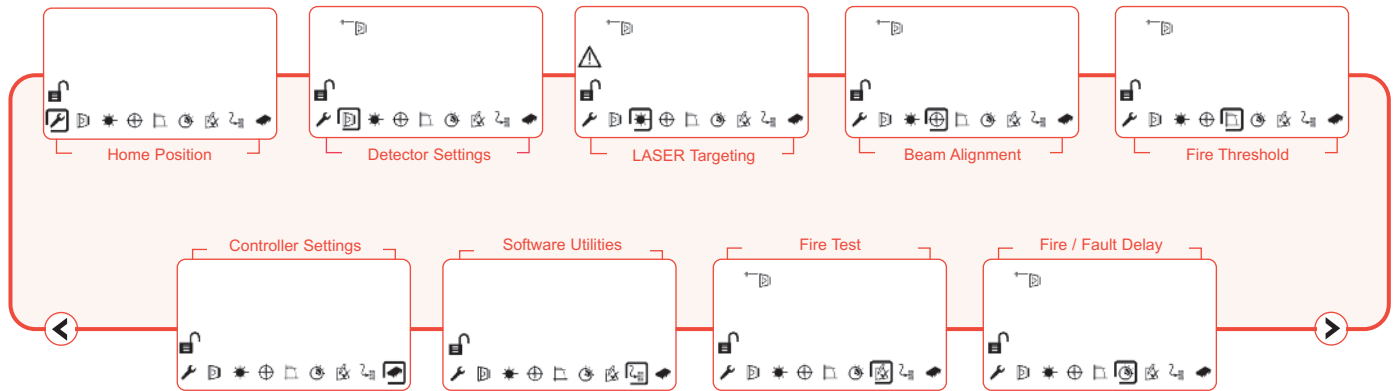
Indicator 5 flashes GREEN to indicate NORMAL System Controller status.
All indicators flash every 10 seconds.





* DETECTORS 2 TO 4 ONLY AVAILABLE ON MULTI-HEAD SYSTEM

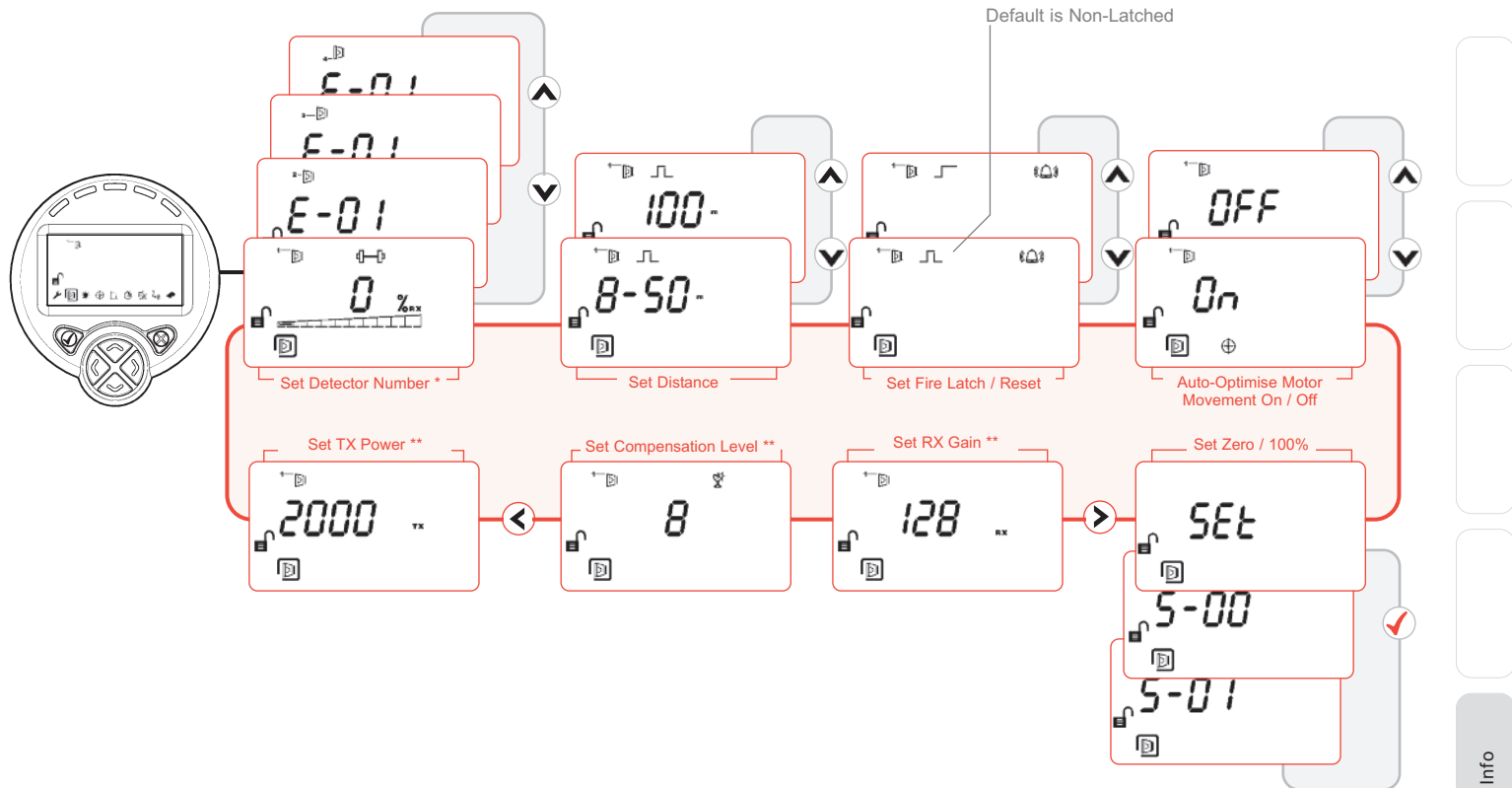


- Press  in this menu to enter the Pass Code
- Press  to put the system into Sleep



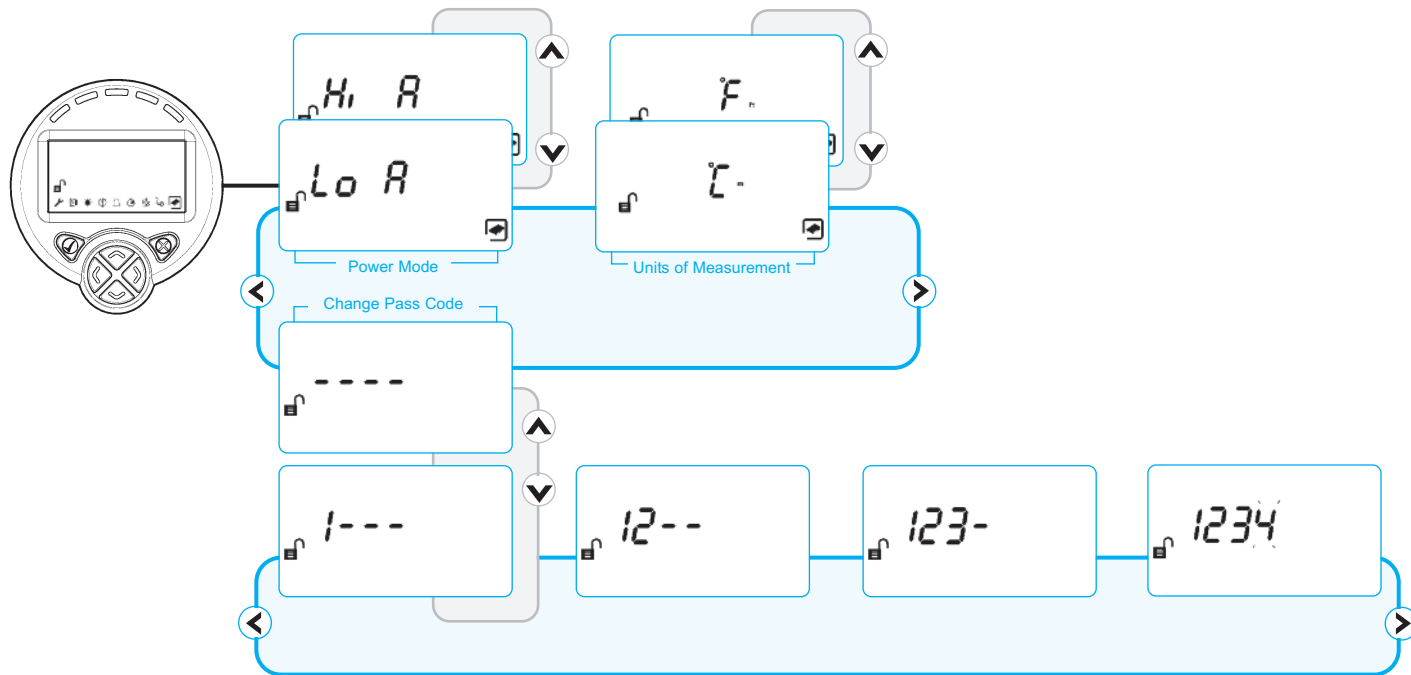


- The Pass Code must be entered to access the Engineering Menu
- The menu is navigated by using   keys to move the cursor.
- Items are selected by using 
- Pressing  exits this menu and returns the system to a 'locked' state



* ONLY AVAILABLE ON MULTI-DETECTOR UNIT

** WARNING: ENGINEERING USE ONLY. ALTERING MAY CAUSE MALFUNCTION



WARNING

Care must be taken when changing the Pass Code. If the code is lost, the unit cannot be unlocked and must be returned to the manufacturer. This is not covered by the warranty.

• Units of Measurement

Changes between 'Metric' and 'Imperial'

• Change Pass Code

Use ◀ ▶ to access each digit

Use ▼ ▲ to change the digit

Press ✓ to save the new Pass Code and return to the settings menu

Press ✕ to cancel the change and return to the Engineering menu

Parameter	Value
Operating Voltage	14—28V DC
Operating Current – Low Power Mode	8—12 mA
Operating Current – High Power Mode	48—52 mA
Fire Threshold Range	0.45—3.98 dB 10—60%
Delay to Fire	2—30 s
Delay to Fault	2—30 s
Operating Distance between Detector and Reflector	8—100 m
Maximum angular misalignment of Detector	± 0.3 Deg
Maximum angular misalignment of Reflector	± 5 Deg
Maximum angular movement of Detector head	± 3.5 Deg
Optical wavelength	850 nm
Rapid obscuration Fault threshold	87%
Operating Temperature (UL Approved)	0—+37.8 Deg C
Operating Temperature (EN54-12 Approved)	-10—+55 Deg C
Storage temperature	-40—+85 Deg C
Relative Humidity (non condensing)	93%
IP Rating	IP54
Relay Contact Voltage	30V DC
Relay Contact Current	100 mA
Maximum Cable Length (Controller to Detector)	100 m
Cable Gauge	24—14 AWG 0.5—1.5 mm
Housing Flammability rating	UL94 V0

Parameter	Description	Default
Pass code	User Code required to access Engineering Menu	1 2 3 4
Power Mode	'Hi A': System will operate at 50mA constant current consumption 'Lo A': System will operate at 10mA constant current consumption	'LoA'
Compensation Level	Range -50 to +205. Level of amplification applied to compensate for dust build-up and building movement At 75 Auto-Optimise is started	0
Transmit power	Range 50 to 4095. Indicates the optical power output. Set automatically by Auto-Align	-
Receive Gain	Range 1 to 255. Indicates the level of amplification applied by the receiver Set automatically by Auto-Align	-
Fire Threshold	Range 10% to 60%. Sets the amount of obscuration required for the Detector to signal a Fire	35%
Delay to Fire	Range 2s to 30s. Sets the time the system needs to be below the Fire threshold before signalling a Fire	10 seconds
Delay to Fault	Range 2s to 30s. Sets the time the system needs to be below the Fault threshold before a Fault is signalled Note the signal needs to fall to <=13% within 2s	10 seconds
Distance	8—50m or 50—100m. Sets the distance between Detector and Reflector. Affects the initial transmit power at the start of Auto-Align	8-50m
Auto-Optimise On/Off	Disables or enables Auto-Optimise (the automatic beam movement function)	On
Latched/non-latched	Sets if the system will latch Fire or automatically reset Faults are always non-latching.	Non-latching

Dimensions	Width, in (mm)	Height, in (mm)	Depth, in (mm)	Weight, lb (kg)
System Controller, including base	7.9 (200)	9.3 (235)	2.8 (71)	2.0 (0.9)
Detector, including 'easy fit' base	5.3 (135)	5.3 (135)	5.3 (135)	1.1 (0.5)
Universal Bracket	5.3 (135)	5.3 (135)	2.8 (71)	0.4 (0.2)
Reflector (Single)	3.9 (100)	3.9 (100)	0.4 (10)	0.2 (0.1)
Protective Cage	Ø5.4 (Ø136)	6.2 (157)	-	0.3 (0.13)

UL Approval Information

UL File Number: S3417

Distance between Detector and Reflector	Fire Threshold Range
8–10m (26.2–32.8ft)	10–18%
10–15m (32.8–49.2ft)	15–25%
15–22m (49.2–72.2ft)	15–35%
22–40m (72.2–131.2ft)	25–50%
40–60m (131.2–196.8ft)	35–50%
60–100m (196.8–328.1ft)	50%

All installations should comply with NFPA72

European Approval Information

 0832
Fire Fighting Enterprises Ltd, 9 Hunting Gate, Hitchin, SG4 0TJ, UK
07 0832-CPD-0565
EN54-12 Line Detector using an Optical Beam Fire Safety Documentation: See doc. 0044-003

Complies with EN54-12 for sensitivity levels between 25% and 35% with a maximum delay to fire of 20 seconds. Protective cage must be fitted to comply with EN54-12.